US008172883B2

(12) **United States Patent**
Bowden et al.

(10) **Patent No.: US 8,172,883 B2**
(45) **Date of Patent: *May 8, 2012**

(54) **METHOD OF TREATING A DEGENERATE SPINAL SEGMENT**

(75) Inventors: **Anton E. Bowden**, Lindon, UT (US); **Larry L. Howell**, Orem, UT (US); **Peter A. Halveson**, Alpine, UT (US); **Eric M. Stratton**, Provo, UT (US)

(73) Assignee: **Brigham Young University**, Provo, UT (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 82 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **12/709,248**

(22) Filed: **Feb. 19, 2010**

(65) **Prior Publication Data**

US 2010/0217326 A1 Aug. 26, 2010

Related U.S. Application Data

(60) Provisional application No. 61/208,018, filed on Feb. 19, 2009, provisional application No. 61/210,740, filed on Mar. 19, 2009.

(51) **Int. Cl.**
A61B 17/88 (2006.01)

(52) **U.S. Cl.** **606/279**

(58) **Field of Classification Search** 606/279, 606/260, 246, 247, 257, 255, 261, 278, 263; 623/17.11–17.16; 128/898

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,945,053	A	3/1976	Hilberry et al.
5,405,408	A	4/1995	Pitkin
5,415,661	A	5/1995	Holmes
5,772,661	A	6/1998	Michelson
6,045,552	A	4/2000	Zucherman et al.
6,379,354	B1	4/2002	Rogozinski
6,527,804	B1	3/2003	Gauchet et al.
6,540,785	B1	4/2003	Gill et al.
6,572,653	B1	6/2003	Simonson

(Continued)

FOREIGN PATENT DOCUMENTS

KR 1020050080493 8/2005

(Continued)

OTHER PUBLICATIONS

U.S. Appl. No. 11/952,709; filed Dec. 7, 2007; Michael D. Ensign; office action mailed Mar. 17, 2011.

(Continued)

Primary Examiner — Pedro Philogene
(74) *Attorney, Agent, or Firm* — Thorpe North & Western LLP

(57) **ABSTRACT**

A method of treating a degenerate spinal segment comprises obtaining a first spinal implant configured to apply a first torque to a degenerate spinal segment having an abnormal curvature and a second spinal implant configured to apply a second torque to the degenerate spinal segment. Each of the spinal implants includes; a plurality of contiguous segments in which the contiguous segments form an angle at a location in which two adjacent contiguous segments of the plurality of contiguous segments intersect; and at least one mounting connection configured to connect the spinal implant to a mounting mechanism, the mounting mechanism being configured to attach the spinal implant to the degenerate spinal segment. The first and second spinal implants are implanted so that the first torque and the second torque act to reduce the abnormal curvature.

4 Claims, 14 Drawing Sheets